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THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Leonel Yanez MARTINEZ et al.	
Serial No. 10/613,433	Group Art Unit: 2831
Filed: July 3, 2003	Examiner: William Mayo II
Title:**DRY WATER RESISTANT COAXIAL CABLE AND METHOD OF MANUFACTURE THEREOF**	**APPELLANTS' REPLY BRIEF UNDER 37 C.F.R. §41.41**
Docket No. MX/JFC-Serv-001	

Assistant Commissioner for Patents
Washington D.C. 20231

Sir:

The following is Appellants' Reply Brief pursuant to 37 C.F.R. §41.41 in response to Examiner's Answer.

1. **The rejection of the claims under 35 U.S.C. §103(a) should be withdrawn because the cited art does not suggest or motivate one of ordinary skill in the art to arrive at the claimed invention**

At the outset, Appellants submit that the presently claimed invention is directed to a dry, water resistant coaxial cable comprising:

a) metal core conductor (**11**);

b) dielectric element around the core, comprising:

i) 1st layer comprising polymr mixed **with adhesive (12)**;

ii) 2nd layer comprising cellular high expansion polymer **(13)** and **swelling agent** on 1st layer ;

iii) optionally, a 3rd layer **(14)** comprising a reinforcement layer on 2nd layer **with adhesive;**

c) 2nd external conductor **(15)** comprising water protective penetration element;

d) protective cover **(17)**.

The **unobviousness of the present invention** over the cited prior art are as follows:

a) 1st and 3rd layers of the present invention contain an adhesive.

b) The 2nd layer comprises a cellular high expansion polymer with a swelling agent;

c) The unobvious configuration/design and structure of the layers of the dry, water resistant coaxial cable of the present invention.

d) 2nd conductor comprises a water protective penetration element.

e) core conductor comprises copper plated aluminum wire a cross section of 3.15 ± 0.3 mm diameter.

f) diameter/thickness of protective cover; 2nd layer thickness; absorp[tion speed and absorption capacity.

The Examiner maintained the rejection of Claims 11-13, 16-18, 20, and 23-25 under 35 U.S.C. §103(a) as being unpatentable over Chan et al. (US 5,486,648) ,509,526) in view of Goehlich (U.S. Patent 6,784,371).

Chan et al. (U.S.5,486,648) discloses a cable, as follows:

a) conductor **(1)**;

b) semiconductive shield **(2)**;

c) insulation layer **(3)**;

d) insulation shield **(4)**;

e) water swellable yarn **(5)**;

f) concentric neutral wires **(6)** *–distributed around the water swellable yarn*;

g) encapsulating jacket **(7)**.

There is **no disclosure or suggestion regarding dry, water resistant** coaxial

cable in Chan et al. The Examiner alleged on page 4 of Examiner's Answer, item C as follows:

> ..."Chan discloses a **dry, water resistant coaxial cable** (Figs 1-8) which provides improved protection against migration of water.... **Chan discloses** a cable (Fig.3) comprising a metal conductor element (11), a dielectric element (2-4) around core conductor (11) which is based on three layers: comprising a **polymer mixed with an adhesive component...**

The Examiner alleged on page 6, first full paragraph of Examiner's Answer as follows:

> "...However, Chan **doesn't necessarily disclose the first layer comprising an adhesive** (claim 11) nor the adhesive being selected from the group of vinyl adhesive, acrylic adhesive and combination thereof (claim 23), nor the adhesive being selected from the group consisting of ethylene acrylate acid, ethylene vinyl acid, and combinations thereof (claim 20) nor the absorption speed being 15 mg/g/min nor the absorption capacity of more than 30 ml/g (Claim 24)...."

The Examiner Answer was **inconsistent** with respect to the disclosure of Chan. First, Chan discloses a polymer with an adhesive component and second, Chan does **not** disclose a polymer with an adhesive. The Examiner Answer was replete with inconsistencies.

It is submitted that there is **no** disclosure or suggestion in Chan regarding a polymer with an adhesive component. Moreover, there is no disclosure or suggestion regarding the absorption capacity of more than 30 ml/g nor the absorption speed of 15 mg/g/min.

In *In re Aller*, 105 USPQ 233 (CCPA 1955), the Court set out the rule that the discovery of an optimum value of a variable in a known process is normally obvious. However, Courts held that there are **exceptions** to this rule in cases where the results of optimizing a variable which was known to be result effective, were unexpectedly good. See *In re Waymouth*, 182 USPQ 290 (CCPA 1974); *In re Saether*, 181 USPQ 36 (CCPA 1974). Further, the court in *In re Antoine*, 195 USPQ 6 (CCPA 1977) pointed out that another exception is one in which the parameter optimized was ***not*** **recognized** to be a result effective variable. It further stated that §103 directs attention to the invention "as a

whole" which includes not only to the subject matter which is literally recited in the claim in question but also those properties of the subject matter *and* are disclosed in the specification.

In this case, the question "as a whole" are the absorption speed and absorption capacity, diameter/thickness of protective cover, external conductor thickness and diameter on the pipe, core conductor cross section diameter, diameter of reinforcement layer and their inherent properties. These properties are configured/designed with the structure of the dry, water resistant coaxial cable which does not use a filler but incorporated a water protection penetration element. This property permits Appellants to prepare and connect the coaxial cable *without using solvents and other cleaning agents*. Thus, it is submitted that it is the invention "as a whole" and not some part of it must be obvious under 35 USC 103.

The issue is whether the differences between the parameters of the prior art and the parameters of the Appellants' invention "as a whole" are such that the Appellants' invention "as a whole" would have been obvious. It is submitted that it would not have been obvious. There is no disclosure or suggestion in Chan et al, Goehlich et al. or Belli et al. to recognize the absorption speed or absorption capacity, diameter/thickness of protective cover, external conductor thickness and diameter on the pipe, diameter of reinforcement layer of the Appellants' invention when a) Chan et al. avoids the use of adhesive. Rather Chan et al. use concentric neutral wires (CN) distributed around the water swellable polymer; b) Belli et al. use *fillers* which is the opposite objective of present invention –avoids the use of fillers; c) Goehlich et al. is directed to detecting water intrusion in a simple cable comprising an inner sheath, an outer sheath and a sensor. It is submitted that recognizing the different cable configuration/design is essential to the unobviousness of the presently claimed invention.

The Examiner refers to the concentric neutral wires (CN) as the 2nd conductor in the presently claimed invention. However, the CN wires in Chan et al. do not contain a water penetration protective element. Moreover, the CN wires stand alone because they are used as a metallic ground shield. In addition, all of the CN wires are distributed around the water swellable yarn. See Figure 2 The CN is interwoven on the insulation shield.

Next, the water swellable yarn of Chan et al. is **non-conductive**. It criss-crosses the CN wires and helically wound around the insulation shield (4). The lay of the water swellable yarn is opposite that of the CN wires.

There is no disclosure or suggestion in Chan et al. regarding a dry, water resistant coaxial cable which comprises a 1st and 3rd layer containing an adhesive.

In order to overcome the adhesive deficiency of Chan et al., the Examiner combined Chan et al. with Goehlich et al.

Goehlich discloses a cable as follows:

a) cable core;

b) inner cable sheath;

c) sensor for detecting detectable substance (extends along the cable);

d) outer cable sheath.

A "structured material" is incorporated between the inner cable sheath and outer cable sheath. The definition of "structured material" is broadly disclosed in col. 4, lines 25-35. It can be a "swellable material" or adhesive layer or sealing material. The Examiner alleged that one of ordinary skill in the art can "pick and choose" a specific adhesive from a plethora of various "**structured material**" disclosed in Goehlich. The Examples and claims of Goehlich et al. employ the use of **sputtered adhesive and sealing material**. The primary object of Goehlich et al. is to provide a cable for detecting water in interstices between outer sheath and inner sheath. Note col. 3, lines 8-11. It is a monitoring system for measurement accuracy and lifetime of the cable.

The structured materials disclosed in Gohlich et al. are as follow:

> The structured material may comprise *swellable material*. Such material, for example comprising a water blocking swelling nonwoven, if in contact with water may increase its size and thereby increase the caulking effect by absorbing the water as an additional effect.
>
> The structured material may comprise a *self adhesive* material, adhesive on at least one side. The structured material may also comprise one sided *adhesive tapes or double sided adhesive* tapes as well as adhesives, which may be sputtered ore otherwise put onto the outer surface of the inner cable sheath during the production process of the cable before extrusion of the outer sheath. Such tape can for example be out of a sticky plastic, e.g. foamed under-*cross-linked acrylic material*. Such adhesives can be each adhesive, which is resistant against the substance to be detected (like water) and which is adhesive to the used material of the inner and/or outer sheath, like adhesives based on for example acrylate polymers, methacrylate

polymers, polyurethans, silicons, epoxy resins and the like. In case of using a double sided adhesive material the two sheaths are bonded together and are able to seal the interstice between the cable sheaths as well as to allow to increase the friction or bonding between the sheaths. "Self adhesive material" in the sense of this invention includes material which can also be made adhesive by a following extrusion process for extruding the outer sheath.

The structured material may also comprise at least one first tape being helix shaped wound around the inner cable sheath. Such kind of applying a part of the structured material according to the invention is very easy to realize during the production process of a cable.

The structured material may also comprise at least one further tape. According to such embodiment of the present invention it is easily possible to create closed sections by covering a continuous part of the surface area of the inner cable sheath, having the at least two tapes frequently overlapped.

The further tape may be helix shaped wound around the inner cable sheath with an opposite spinning direction to that of the first tape. A structured material according to such embodiment of the present invention allows a symmetrical distribution of friction between the sheaths of the cable.

The further tape is mainly longitudinally arranged on said inner cable sheath. A structured material according to such embodiment of the present invention is very easy to realize during the production process of a cable. Furthermore the material consumption of such structured material is less than that of the latter version.

The structured material may comprise a sputtered adhesive and sealing material. A sputtering processes according to such embodiment of the present invention, which uses for example fixed or movable (around the inner sheath) cannulas or nozzles for applying adhesives on the inner cable sheath before extrusion of the outer sheath to create a structured material in accordance with the present invention, is a very appropriate production technique.

The structured material may comprise at least one tape and one stripe shaped sputtered adhesive material. Using a material mix according to such embodiment of the present invention and therewith using different production processes may allow the usage of a combined tool and save one production step, i.e. one time consuming moving of the semi-finished product.

The least one of said tape and stripe shaped sputtered material may be helically shaped. A structure of a part of a structured material according to such embodiment of the present invention can easily be realized by a rotating sputter tool rotating around the inner sheath of a cable, which is at the same time longitudinally moved.

> One of said tape and stripe shaped sputtered material is longitudinally arranged. Such a preferred embodiment according to the present nvention allows a combination of one static production step of one technique with one moving production step of the other technique, both applied on the inner sheath of a cable, which is at the same time longitudinally moved. Here it may be preferable to apply an approximately longitudinal stripe shaped sputtered adhesive material on the inner sheath and wind a tape around it. A cable according to this embodiment of the present invention may have higher flexibility in case the helically wound tape is not adhesive on both sides, allowing more friction between the inner sheath and the outer sheath. According to an other preferred embodiment according to this aspect of the invention it may be also preferable, to apply a stripe shaped sputtered adhesive material by for example a nozzle, which rotates approximately 360.degree. around the inner cable sheath and for example changing the movement direction each approximately 360.degree and additionally putting a tape approximately longitudinally along the inner cable sheath (for example overlapping the area, where the nozzle changes its direction after approximately 360° rotating movement).

The Examiner alleged that an adhesive component may be selected from the various polymer listed above. From the above broad disclosure of polymers which can be used as "structured material," it is submitted that one of ordinary skill in the art does not have any *guidance or direction* on which polymer from Goehlich et al. may be incorporated in Chan et al. to obtain a modified cable which will provide the properties similar to the Appellants' presently claimed dry, water resistant coaxial cable.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 16 USPQ 2d (Fed. Cir. 1990).

There is no disclosure or suggestion in Goehlich et al. regarding "picking and choosing",e.g., pick a specific adhesive, as employed in the presently claimed invention and choose the specific adhesive from a plethora of various polymers in Goehlich et al. and incorporate the chosen specific adhesive in Chan et al. Rather, Chan et al. employ concentric neutral wires (CN) distributed around the water swellable yarn to provide the necessary shield.

The Examiner further used Belli et al. to show that a swelling agent can be employed to modify the cable of Chan et al. Belli discloses **an electrical cable for high or medium voltage power transmission** as follows:

a) conductor (**1**);

b) inner semiconductive layer (**2**);

c) insulating layer (**3**);

d) compact semiconductive layer (**4**);

e) expanded layer (**5**);

f) metal shield (**6**);

g) outer sheath (**7**).

The Appellants' invention is directed to dry, water resistant coaxial cable. Coaxial cables are different from electrical cables. Coaxial cables are for electronic or video use, data transmission, analog or digital, television transmission, internet signal transmission, carry broad band, and high frequency signals. Appellants submit that the presently claimed invention is different and unobvious from that of Belli et al.

The Examiner alleged that it would be obvious to modify Chan et al. with the swelling agent of Belli et al. However, Appellants question how one of ordinary skill in the art would modify the cable of Chan upon reading the disclosure of Belli et al. Belli et al. disclose an expanded layer (**5**) which is **semi-conductive**. Belli et al. adds carbon black to the expanded layer. **Example 3** of Belli et al. provides as follows:

a) inner semiconductive layer EPR (ethylene/propylene copolymer) with carbon black;

b) insulating layer EPR filled with kaolin;

c) outer semi-conductive layer EVA (ethylene vinyl acetate) with carbon black;

d) a deposit of the expanded layer on the cable core.

In contrast, Chan et al.'s water swellable yarn is **non-conductive.** Moreover, Chan et al. provide the use of concentric neutral wires (CN) which are distributed around the water swellable yarn. There is no disclosure or suggestion to one of ordinary skill in the art to combine the swelling agent of Belli et al. with the swellable yarn of Chan et al. because CN wires are distributed around the water swellable yarn. Moreover, the swellable yarn is **non-conductive** while Belli et al's expanded layer is **semi-conductive**.

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a

bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).

Similarly, in the present case, the expanded layer of Bell et al. is **semiconductive** while the water swellable yarn of Chan et al. is **non-conductive**. Chan et al. employ concentric neutral wires distributed around the water swellable yarn while Belli et al. employ carbon black and swelling agent on the expanded layer. One of ordinary skill in the art confronted with the problem will not incorporate the swelling agent in the water swellable yarn which contain concentric neutral wires distributed around it because this combination would require a substantial reconstruction and design of the elements.

Even assuming *arguendo* that Chan et al is properly combinable with Belli et al., it is submitted that Belli et al. provide a broad disclosure of expanded layers at cols.5-6 as follow:

> The polymer material which constitutes the expanded layer can be any type of expandable polymer such as, for example: polyolefins, copolymers of different olefins, copolymers of an olefin with an ethylenically unsaturated ester, polyesters, polycarbonates, polysulphones, phenol resins, urea resins, and mixtures thereof. Examples of suitable polymers are: polyethylene (PE), in particular low density PE (LDPE), medium density PE (MDPE), high density PE (HDPE), linear low density PE (LLDPE), ultra-low density polyethylene (ULDPE); polypropylene (PP); elastomeric ethylene/propylene copolymers (EPR) or ethylene/propylene/diene terpolymers (EPDM); natural rubber; butyl rubber; ethylene/vinyl ester copolymers, for example ethylene/vinyl acetate (EVA); ethylene/acrylate copolymers, in particular ethylene/methyl acrylate (EMA), ethylene/ethyl acrylate (EEA) and ethylene/butyl acrylate (EBA); ethylene/alpha-olefin thermoplastic copolymers; polystyrene; acrylonitrile/butadiene/styrene (ABS) resins; \ halogenated polymers, in particular polyvinyl chloride (PVC); polyurethane (PUR); polyamides; aromatic polyesters such as polyethylene terephthalate (PET) or polybutylene terephthalate (PBT); and copolymers thereof or mechanical mixtures thereof.
>
> Preferably, the polymer material is a polyolefin polymer or copolymer based

> on ethylene and/or propylene, and is chosen in particular from: (a) copolymers of ethylene with an ethylenically unsaturated ester, for example vinyl acetate or butyl acetate, in which the amount of unsaturated ester is generally between 5 and 80% by weight, preferably between 10 and 50% by weight; (b)elastomeric copolymers of ethylene with at least one C_3-C_{12} α -olefin, and optionally a diene, preferably ethylene/propylene (EPR) or ethylene/ propylene/diene (EPDM) copolymers, generally having the following composition: 35-90% mole of ethylene, 10-65% mole of α -olefin, 0-10% mole of diene (for example 1,4-hexadiene or 5-ethylidene-2-norbornene); (c) copolymers of ethylene with at least one C_4-C_{12} α -olefin, preferably 1-hexene, 1-octene and the like, and optionally a diene, generally having a density of between 0.86 and 0.90 g/cm^3 and the following composition: 75-97% by mole of ethylene; 3-25% by mole of α -olefin; 0-5% by mole of a diene; (d) polypropylene modified with ethylene/ C_3-C_{12} α-olefin copolymers, wherein the weight ratio between polypropylene and ethylene/C_3-C_{12} α -olefin copolymer is between 90/10 and 10/90, preferably between 80/20 and 20/80.
>
> For example, the commercial products Elvax.RTM. (Du Pont), Levapren.RTM. (Bayer) and Lotryl.RTM. (Elf-Atochem) are in class (a), products Dutral.RTM. (Enichem) or Nordel.RTM. (Dow-Du Pont) are in class (b), products belonging to class (c) are Engage.RTM. (Dow-Du Pont) or Exact.RTM. (Exxon), while polypropylene modified with ethylene/alpha-olefin copolymers are commercially available under the brand names Moplen.RTM. or Hifax.RTM. (Montell), or also Fina-Pro.RTM. (Fina), and the like.

Upon reading Belli et al., one of ordinary skill in the art is confronted with various polymers, polymer components, or any type of polymers in the preparation of expanded polymers. Similarly, Belli et al. disclose a BROAD range of polymers for use as expandable polymer.

Appellants submit that of the above list of polymers, the Examiner's assertion that it would be obvious to one of ordinary skill in the art to **"pick and choose"** a specific polymer from a long list of disclosed polymer is erroneous.

Moreover, the Examiner's assertion that it would be obvious to "pick and choose" an adhesive, more particularly ethylene acrylate from the plethora od various polymers disclosed in Goehlich et al. is without support.

This would have required one of ordinary skill in the art to randomly or arbitrarily "pick and choose" among a number of different polymers, a plurality of ingredients such as blowing agents, fillers, photoinitiators, surfactants, a range of radiation polymerization conditions and characteristics. *In re Arkley*, 172 USPQ 524 (CCPA 1972).

The Examples did not provide any information or guidance which polymer or group of polymer components, one of ordinary skill in the art would "pick and choose"

from a list of polymers. None of the polymers listed above provides the use of ethylene acrylate as an adhesive in Belli et al.

It is submitted that the Examiner's rejection falls short of what is necessary for an obviousness rejection. It has been found that a broad disclosure failed to constitute a description of a specific claimed compound. It has been subsequently stated that without specific direction, a general disclosure will not be sufficient to support an obviousness rejection. *In re Ahlbrecht*, 168 USPQ 293 (CCPA 1971)

One of ordinary skill in the art, wouldn't randomly or arbitrarily pick a specific swelling layer employed by the present invention and accomplish the necessary results achieved by the Appellants.

Thus, the Examiner used Goehlich et al. or Belli et al. "as a template to **pick** and **choose"** among several infinite variety of polymers to demonstrate obviousness of the claims. By "picking and choosing", one can thus find all the limitations, but the specification provides no direction, let alone "full, clear, concise and exact" direction required to the claimed combination. The same "picking and choosing" is required in order to arrive at all the claimed combinations. When one has to "pick and choose" among a wide variety of polymers, structured materials, tapes, self adhesive, sealing agents, the subject matter of the claimed invention has not been described as required by the statute. Possession of the subject matter at the time of the invention has not been demonstrated. One of ordinary skill in the art would have to "pick and choose" through Goehlich et al. or Belli et al.'s specification in order to find the "claimed limitation."

It is impermissible to **"pick and choose"** from any one of the reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. *In re Wesslau*, 147 USPQ 391 (CCPA 1965).

Measuring a claimed invention against the standard established by §103 requires the oft-difficult but critical step of casting the mind back to the time of the invention to consider the thinking of one of ordinary skill in the art guided only by prior art references and then accepted wisdom in the field. We can not use hindsight reconstruction to "**pick** and **choose"** among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 5 USPQ 2d 1780 (Fed. Cir. 1988).

Design is a critical element of the present invention. The Appellants have developed a dry, water resistant coaxial cable which does not use fillers.

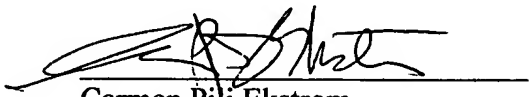
From the above, the Examiner has not shown the motivation to "choose/select" a) ethylene acrylate as an adhesive; or b) swelling agent from a multitude of polymers, combination of multitude of polymers disclosed in Goehlich et al. or Belli et al.

Further, the ability of one of ordinary skill in the art to prepare a swellable polymer *does not* lead the artisan to achieve the presently claimed cable because there are several factors to be considered, e.g., manipulation of the layering/configuration, design of different polymer layers; addition of adhesives to 1st and 3rd layers, addition of swelling agent on 2nd layer; the 2nd conductor element containing the water protection element, absorption capacity, absorption speed, diameter or thickness of different layers.

Moreover, the claims at issue recite specific combinations of characteristics/properties which were not addressed by the Examiner. Rather, the Examiner attempted a "broad conclusory statements " regarding the teaching of Belli et al. and Goehlich et al. **Broad conclusory statements, standing alone are not evidence**, *In re Dembiczek*, 50 USPQ 2d 1614 (Fed. Cir. 1999) at 1617.

From the above, Appellants submit that the Examiner has not presented sufficient argument or reasoning to establish a prima facie case of obviousness. Appellants request the reversal of Examiner's action in rejection claims 11-13, 16-18, 20 and 23-25 and allowance thereof are respectfully requested.

Respectfully submitted,



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